Date: Wed, 31 Aug 94 04:30:25 PDT
From: Ham-Homebrew Mailing List and Newsgroup <ham-homebrew@ucsd.edu>
Errors-To: Ham-Homebrew-Errors@UCSD.Edu
Reply-To: Ham-Homebrew@UCSD.Edu
Precedence: Bulk
Subject: Ham-Homebrew Digest V94 #259
To: Ham-Homebrew

Ham-Homebrew Digest Wed, 31 Aug 94 Volume 94 : Issue 259

Today's Topics:

Send Replies or notes for publication to: <Ham-Homebrew@UCSD.Edu>
Send subscription requests to: <Ham-Homebrew-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Homebrew Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-homebrew".

Date: 30 Aug 1994 13:06:12 GMT
From: olivea!inews.intel.com!ilx018.iil.intel.com!ilx049.iil.intel.com!
dbraun@ames.arpa
Subject: FFTMORSE (was: DSP on a SoundBlaster)
To: ham-homebrew@ucsd.edu

In article <777704714snx@djwhome.demon.co.uk>, david@djwhome.demon.co.uk (David
Woolley) writes:

|> Unfortunately this is nothing like what was being asked for, which is
|> analogue input and output with digital filtering, which you can't do on
|> any of the 8 bit SBs in real time.

I am planning to try to prove this wrong. The CPU horsepower is not a
problem. Of course, you need a fairly fast CPU (e.g. 486). Also,
the PC won't be able to do anything else at the same time...

Doug Braun (4X/N1OWU)

Email: dbraun@inside.intel.com
Intel Mail: IDC1-41
iNet: 8-435-5069   Long Distance: 011-972-4-655069
Fax: 8-435-5999   Long Distance: 011-972-4-655999
Snail Mail: US: Other:
                PO Box 311   Intel Israel, Ltd.
                Mendham, NJ 07945   IDC-42
                                        Matam Scientific Center
                                        Haifa, Israel 31015

Date: Tue, 30 Aug 1994 19:39:17 GMT
From: ihnp4.ucsd.edu!news.cerf.net!mr.net!idss.nwa.com!csinc!
chrise@network.ucsd.edu
Subject: FSTV: Modifying a Gemini RABBIT for amateur service?
To: ham-homebrew@ucsd.edu

In article <btobackCvAzDI.J62@netcom.com>,
Bruce Toback <btoback@netcom.com> wrote:
>In article <33rb58$9kr@dewey.cc.utexas.edu> rcamama@dewey.cc.utexas.edu (Robert
Camama) writes:
>>
>>Just wondering,
>>   I could swear I heard something over the last two years about
>>modifying a Gemini RABBIT VCR-to-TV wireless TX-RX system [or at least the
>>TX part] for amateur FSTV service. Has this been done, or at least, is
>>it possible? If so, over what bands [I'm not certain what freqs the RABBIT
>>works on]?
>
>The RABBIT works at around 900 MHz and can easily be modified for use on
>the 33cm ham band. There was an article in the November or October 1993
>73 magazine that described the modification and a small power amplifier.
>

Do these Rabbit transmitters use any sort of chip (like, MC1317x perhaps)
as the exciter... or are they all discrete ? I'm curious if they would
be mod'able for FM modulation and perhaps highspeed FSK.

Chris
--
Chris Elmquist, N0JCF   voice: (612)631-7614
chrise@comtrol.com   fax: (612)631-8117

Date: Tue, 30 Aug 94 14:44:10 CDT
From: ihnp4.ucsd.edu!swrinde!gatech!darwin.sura.net!maze.dpo.uab.edu!
uabdpo.dpo.uab.edu!NURS036@network.ucsd.edu
Subject: Help for Equivalent Heath SB104A Part
To: ham-homebrew@ucsd.edu

After 4 years in storage after a move, I dug out my old Heath SB104A
to set up in my new house.

Unfortunately, some bandswitch contacts are only intermittant, and no
amount of cleaning has rectified the problem.

Does anyone know of an available equivalent for the following (I only
have the Heath part # available...):

S1A & B: Heath # 63-721: 2-Wafer Rotary Switch
S1C & D: Heath # 63-723: Rotary Switch

Any hints on a suitable replacement & where to order them would be
appreciated!

73,

Michael

- -
Michael T. Weaver, RN Ph.D.
U. of Alabama at Birmingham   Internet: nurs036@uabdpo.dpo.uab.edu
School of Nursing   Bitnet : nurs036@uabdpo
UAB Station   Radio   : kg8h (qrp arci # 8576)
Birmingham, AL 35294-1210   Phone   : (205) 934-6913
- -

Date: 30 Aug 94 14:10:17 GMT
From: news-mail-gateway@ucsd.edu
Subject: More on Receivers that Radiate
To: ham-homebrew@ucsd.edu

> David Newkirk's post in digest #258 prompted this post. I have first
> hand experience with the receiver radiation problem he described. I
> work in an all metal building which thankfully does have windows. I
> have an antenna for FM broadcast near one office with a window. My
> favorite station is 102.9 but several others' favorite station is 92.1
> including the person whose office is below my antenna. Add 10.7 to

92.1 and you get 102.8 which completely wipes out my station. I looked at it with the spectrum analyser and the LO from the guy's boom box is 5 db stronger than the signal I am trying to receive.

This should make it obvious why they do not want you to use a portable FM radio in an aircraft where the LO can easily be in the aircraft band.

My experience with cheap boom box type radios and small portable radios has been consistent. They make incredibly good transmitters!

Ray
WD5IFS
mack@mails.imed.com

Date: Mon, 29 Aug 1994 20:42:01 GMT
From: ihnp4.ucsd.edu!galaxy.ucr.edu!library.ucla.edu!europa.eng.gtefsd.com!howland.reston.ans.net!darwin.sura.net!fconvx.ncifcrf.gov!mack@network.ucsd.edu
Subject: Portable EME Station -- Questions
To: ham-homebrew@ucsd.edu

In article <btobackCuyHH5.Hw4@netcom.com> btoback@netcom.com (Bruce Toback) writes:
>
>I hope that one of these will be the correct newsgroup for this
>question; advice on redirection is welcome.
>
>I'm thinking of assembling a portable EME station that I could use
>for demonstrations at schools. I don't know if such a thing is
>possible at any reasonable cost, or for any reasonable definition
>of "portable." But here are the questions anyway:
>
>1. I assume that because of my Arizona location, I can't use
>   432MHz. This seemed to be the best compromise between power
>   amplifier practicality and antenna size. Is 23cm a good
>   second choice?

I've just started on EME. I picked 2m because there's more gear available, and there are more people on 2m EME than other bands. There are technical reasons (cooler sky) why 432 etc are better, but if you want to get on easily, 2m can't be beat.

>
>The objective is a station that can hear its own echoes -- not
>necessarily with communication-capable quality -- and can
>communicate with a "big gun" EME station.

A station that can hear its own echoes is a big gun station to me.
I think there are a lot more people who can't hear their own echoes than
those that can.

     Joe Mack NA3T
     mack@ncifcrf.gov
     (Nat Inst Health)

>
>Thanks,
>-- Bruce Toback
>KN6MN

Date: Tue, 30 Aug 1994 18:50:00 GMT
From: ihnp4.ucsd.edu!mvb.saic.com!news.alpha.net!MathWorks.Com!news.duke.edu!news-feed-1.peachnet.edu!gatech!swrinde!sdd.hp.com!col.hp.com!srgenprp!alanb@network.ucsd.edu
Subject: regenerative sets and selectivity
To: ham-homebrew@ucsd.edu

Brent G. DeWitt (bdewitt@csn.org) wrote:
: Dave Newkirk (WJ1Z) (dnewkirk@arrl.org) wrote:

: : It's good to see that relatively little traffic on this topic has dwelt long
: : on the issue of how much a regen or a superregen radiates. (Any text that
: : says something like "Don't use those detectors; they radiate" is another
: : case of the specific case, or implementation, being taken as the general
: : case. An RF-amplifierless "direct-conversion" receiver, and likewise an
: : RF-amplifierless superhet with a poorly balanced mixer and insufficient
: : input selectivity, will also radiate, sometimes quite strongly.) A
: : reasonably unliteral RF amplifier stage, along with proper shielding, can
: : take care of detector or mixer radiation in any of these cases. Input
: : filtering (in superhets) also helps.

: : Data point: The 40-meter regen I published in Sep 1992 *QST* radiates--at a
: : level of roughly 12 picowatts into a 50-ohm antenna load.

: In general, regens DO radiate! The FCC requires that they be CERTIFIED
: with the FCC before commercial sale, while super-hets only require
: notification. None of this means a thing as an experimenter building one
: item for his/her use, but it does imply that history has shown regens to
: be pretty good transmitters......

People generally use regenerative detectors to reduce circuit complexity,
which implies that the rest of the circuit should be simple too. For that

reason, most regen's lack an RF amplifier in front of the detector, so they radiate like crazy.

However, as Dave mentions, it is quite possible to eliminate the problem by including an RF amplifier with good reverse isolation. Another way is to use the regenerative detector at an IF frequency, as part of a superhet receiver: Most mixers have enough isolation to eliminate any radiation problem.

AL N1AL

Date: 30 Aug 1994 18:21:11 GMT
From: galaxy.ucr.edu!library.ucla.edu!europa.eng.gtefsd.com!howland.reston.ans.net!gatech!newsxfer.itd.umich.edu!jobone!fiesta.srl.ford.com!eccdb1.pms.ford.com!rchp33.eld.ford.@ihnp4.ucsd.edu
To: ham-homebrew@ucsd.edu

References <515@ted.win.net>, <1994Aug29.152234.29324@arrl.org>, <CvBCA0.FBy@csn.org>
Subject : Re: regenerative sets and selectivity

Brent G. DeWitt (bdewitt@csn.org) wrote:
: Dave Newkirk (WJ1Z) (dnewkirk@arrl.org) wrote:

: : It's good to see that relatively little traffic on this topic has dwelt long
: : on the issue of how much a regen or a superregen radiates. (Any text that
: : says something like "Don't use those detectors; they radiate" is another
: : case of the specific case, or implementation, being taken as the general

Hear Hear! I cannot agree more. Sure, there are lots of examples of crude superregens that radiate like banshees, but they are just that--crude receivers. Superregens are superior to 'hets in terms of sensitivity vs. cost and simplicity, IMHO. Same sort of baseless statements as: MOSFET's are better than bipolar transistors, RISC is better than CISC, and Coke is better than Pepsi. Of course, the last is a TRUE statement, but I digress..:-)

: : case. An RF-amplifierless "direct-conversion" receiver, and likewise an
: : RF-amplifierless superhet with a poorly balanced mixer and insufficient
: : input selectivity, will also radiate, sometimes quite strongly.) A
: : reasonably unliteral RF amplifier stage, along with proper shielding, can
: : take care of detector or mixer radiation in any of these cases. Input
: : filtering (in superhets) also helps.

Very good points indeed. Having direct experience with designing both types of receivers, I completely agree. A superregenerative transistor oscillator usually runs with about 200 uA of collector current, while the

LO in most wireless-type superhet designs consumes at least a couple mA.
When both circuits are preceeded by a well designed amplifier with a
decent amount of reverse isolation, say 40 dB or so, the radiated emissions
will meet US FCC, Canadian DOC, and the various european regs.

: : Data point: The 40-meter regen I published in Sep 1992 *QST* radiates--at a
: : level of roughly 12 picowatts into a 50-ohm antenna load.

Another data point, the 315 MHz superregenerative recevier inside the upcoming
Explorer's Remote Keyless Entry system is about 3-4 dB off the noise floor
at 3 meters. I would consider both my design and David's to be "state of
the art" in terms of superregen receivers.

: In general, regens DO radiate! The FCC requires that they be CERTIFIED
: with the FCC before commercial sale, while super-hets only require
: notification. None of this means a thing as an experimenter building one

I don't consider that the FCC only requires notification for 'hets to mean
that they are superior from a re-radiation standpoint! Remember, the FCC
had to mold and shape the broadcast world that we now live in, and their
plan was to make the receivers cheap, simple, and easy to market. The
rule for Notification for the superhet's simply makes it easy to market,
and takes them off of the hook of having to tightly regulate all the mfgr's
of broadcast sets. The economics and business reasons for this rule are,
IMHO, more significant than any technical reasons.

: item for his/her use, but it does imply that history has shown regens to
: be pretty good transmitters......

Seeing that history has spent much more effort improving the superhet, as it
supports both FM and AM broadcast, that is not that hard to believe. I have
a very thorough collection of superregen articles and papers, and they fill
about 6" of file cabinet space. I wouldn't even attempt to collect all the
papers and patents re: superhets.

The reason for the regen's bad rap is that in thermionic times (that's
toobs to you and me) an RF stage was an extra capacitor gang, an extra tube,
and more W of filament power--real product cost/benefit considerations.
Now, mass-produced superregens are relegated to wireless control receviers,
a job which they do very well, but ultra cost sensitive -- an RF stage adds
components, board space, current draw, etc. -- again, real cost/benefit
tradeoffs. As wireless products become more complex, you will see them move
away from superregens to other topologies that support more complex & compact
modulation methods, but only when costs allow and functionality demands it.

But of course, I am biased as I design superregens for a living... I
would be happy to correspond with anyone wanting to discuss the merits and
pitfalls of this simple, sensitive, and cost effective receiver...

--
Tom LeMense
RF Product Design Engineer
Ford Motor Co - Electronics Division
tlemense@rchp33.eld.ford.com
'82 XV750 Virago DoD #1074

Date: 30 Aug 1994 15:37:30 GMT
From: ihnp4.ucsd.edu!dog.ee.lbl.gov!overload.lbl.gov!agate!howland.reston.ans.net!
europa.eng.gtefsd.com!news.umbc.edu!eff!news.kei.com!ssd.intel.com!chnews!
scorpion.ch.intel.com!cmoore@@.
To: ham-homebrew@ucsd.edu

References <BRUSCH.1.00126AD8@NCSBST01CA.NTC.NOKIA.COM>,
<777704714snx@djwhome.demon.co.uk>, <33vas4INN11j4@ilx018.iil.intel.com>ew
Subject : Re: FFTMORSE (was: DSP on a SoundBlaster)

In article <33vas4INN11j4@ilx018.iil.intel.com>,
Braun Doug <dbraun@iil.intel.com> wrote:
>In article <777704714snx@djwhome.demon.co.uk>, david@djwhome.demon.co.uk (David
Woolley) writes:
>
>|> Unfortunately this is nothing like what was being asked for, which is
>|> analogue input and output with digital filtering, which you can't do on
>|> any of the 8 bit SBs in real time.
>
>I am planning to try to prove this wrong. The CPU horsepower is not a
>problem. Of course, you need a fairly fast CPU (e.g. 486). Also,
>the PC won't be able to do anything else at the same time...
>Doug Braun (4X/N1OWU)

Hi Doug, I don't think David means the PC can't do the filtering. I have
been down the same road and found that an 8-bit A/D needs AGC on the
front end where a 16-bit A/D does not. Saturation is a huge problem in
8-bit systems and the dynamic scaling required eats up a lot of CPU
power. Low dynamic range often leaves one with almost no low-level signal
left to filter. It can be done with 8-bits but the complexity is IMO, not
worth it. A 16-bit A/D gives one a lot of "headroom" and has saved my
sanity. A 2-pole sigma filter gets rid of a lot of noise, too.

73, Cecil, KG7BK, OOTC (Not speaking for Intel)

--
 Intel, Corp.
 5000 W. Chandler Blvd.

Chandler, AZ 85226

Date: (null)
From: (null)
  "This Disc contains Hacking, Phreaking, Tone Box Information, Anarchy,
  Subculture, Magic, Internet & Computer Security Secrets, Bomb Plans,
  FBI & Police Net Files, Virus Code, Sick & Twisted Graphics, UFO,
  Occult, even HAM RADIO Files, plus much, much more!"
               ^^^ ^^^^^

Date: Tue, 30 Aug 1994 22:17:28 GMT
From: ihnp4.ucsd.edu!swrinde!gatech!newsfeed.pitt.edu!gvls1!rossi@network.ucsd.edu
To: ham-homebrew@ucsd.edu

References <1994Aug29.152234.29324@arrl.org>, <CvBCA0.FBy@csn.org>,
<33vtan$b0v@eccdb1.pms.ford.com>
Subject : Re: regenerative sets and selectivity

In article <33vtan$b0v@eccdb1.pms.ford.com> tlemense@rchp33.eld.ford.com (T J
LeMense (Tom)) writes:
>Brent G. DeWitt (bdewitt@csn.org) wrote:
>: Dave Newkirk (WJ1Z) (dnewkirk@arrl.org) wrote:
>
>: In general, regens DO radiate! The FCC requires that they be CERTIFIED
>: with the FCC before commercial sale, while super-hets only require
>: notification. None of this means a thing as an experimenter building one
>
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>that they are superior from a re-radiation standpoint! Remember, the FCC
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>rule for Notification for the superhet's simply makes it easy to market,
>and takes them off of the hook of having to tightly regulate all the mfgr's
>of broadcast sets. The economics and business reasons for this rule are,
>IMHO, more significant than any technical reasons.
>
>: item for his/her use, but it does imply that history has shown regens to
>: be pretty good transmitters......

Superhets radiate too!!   I discovered recently while trying to listen to
a repeater on 444.0 MHz I kept hearing various carriers and noises come
and go as I drove around. They sounded very "local" since often they were
full quieting but they would have lots of very deep fades then disappear a

half mile down the road... then come back... then disappear.

Turns out what I was hearing was the local oscillators in other car radios tuned to a popular local FM station on 100.3 MHz

  100.3 + 10.7 = 111.0 MHz LO frequency x 4th harmonic = 444.0 MHz

With some car radios (mine) you can even hear some modulation from the FM station way way way down in the noise.

If you have 440 mobile, pick the 440 frequency that matches a local FM station and see how many car radios you can hear while you are driving around ;-) You will be amazed!   Some of those suckers really put out some signal!

FM STATION	LO	LO 4th harmonic
99.50	110.20	440.80
99.70	110.40	441.60
99.90	110.60	442.40
100.10	110.80	443.20
100.30	111.00	444.00
100.50	111.20	444.80
100.70	111.40	445.60
100.90	111.60	446.40
101.10	111.80	447.20
101.30	112.00	448.00
101.50	112.20	448.80
101.70	112.40	449.60

==========
Pete Rossi - WA3NNA rossi@vfl.paramax.COM

Unisys Corporation - Government Systems Group
Valley Forge Engineering Center - Paoli, Pennsylvania
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End of Ham-Homebrew Digest V94 #259
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